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I S O

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INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

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ISO/TC 97/SC 2
(Sec. 12) 30 F/E

Janvier 1963

ISO/TC 97/SC 2
JEUX DE CARACTERES ET CODAGE

Secrétariat :
FRANCE

Avant-projet de

REPERTOIRES CODES A 6 ET 7 ELEMENTS BINAIRES D'INFORMATION DESTINES AUX ECHANGES D'INFORMATION

ISO Draft proposal

6 AND 7 BIT CHARACTER CODES FOR INFORMATION PROCESSING INTERCHANGE

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* Ce document ne diffère du document ISO/TC 97/GT B (Sec-12) 30 F/E octobre 1962 que par l'adjonction à l'historique de la résolution adoptée en séance plénière du Comité ISO/TC 97 (Paris 17-18 octobre 1962). En outre, une traduction en français des notes explicatives a été ajoutée.

* The only difference between document ISO/TC 97/GT B (Sec-12) 30 F/E October 1962, and this one is in the "Brief History", which now contains the resolution adopted by ISO/TC 97 Plenary meeting (Paris October 17th, 18th, 1962). Besides, a translation into French of the "Explanatory comments" has been added.

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Historique

La présente Recommandation a été élaborée par le Comité Technique ISO/TC 97 (Groupe B), dont le Secrétariat est assumé par l'AFNOR.

Le Comité Technique a commencé son étude en 1962 ; des avant-projets ont été présentés à Paris au mois de Mai par les Membres participants :

Allemagne
Etats-Unis
France
Italie
Royaume-Uni

Une synthèse de ces différentes propositions fut réalisée et le projet en résultant a été diffusé en vue de nouvelles discussions en octobre 1962.

Les Comités membres et observateurs suivants ont participé aux discussions d'octobre :

Allemagne	Royaume-Uni
Etats-Unis d'Amérique	Suède
France	Organisations internationales
Italie	CCITT
Japon	ECMA
Pays-Bas	UIC

De nouvelles modifications ont été décidées et il en a été tenu compte dans la proposition ci-après.

Cette proposition a été soumise, les 17 et 18 octobre, au Comité plénier ISO/TC 97 qui l'a approuvée sous forme de la résolution suivante :

Résolution n° 1

Le Comité ISO/TC 97 approuve la mise en circulation du document ISO/TC 97/GT B (Sec. 12)30 comme premier avant-projet, par son propre secrétariat, auprès de :

a) - les membres P et O du Comité ISO/TC 97 ;

b) - tous les Groupes de Travail du Comité ISO/TC 97 ;

c) - le secrétariat du Comité ISO/TC 95 et plus particulièrement son Groupe de Travail H ;

d) - le Secrétariat du Comité ISO/TC 39 "Machines-outils" ;

e) - les Organisations internationales et notamment le CCITT, l'ECMA, l'UIC.

Le Comité ISO/TC 97 invite son Secrétariat à transmettre au Secrétariat du Groupe de Travail B tous les commentaires qu'il recevra des pays-membres et autres organisations auxquels le projet aura été envoyé, pour permettre au Groupe de Travail B de les étudier et de continuer son travail de préparation d'un deuxième avant-projet de recommandation si nécessaire.

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Brief History

The present Recommendation was prepared by Technical Committee ISO/TC 97 (Group B) the Secretariat of which is held by AFNOR.

The Technical Committee began his work in 1962 ; draft proposals have been submitted in Paris in May by the participating member Bodies :

France
Germany
Italy
United Kingdom
United States

A synthesis of the various proposals was achieved and the resulting draft circulated for further discussions in October 1962.

The following member bodies and observers participated in the October discussion :

France	United Kingdom
Germany	United States of America
Italy	International Organizations
Japan	CCITT
Netherlands	ECMA
Sweden	UIC

Further modifications were made and are incorporated in the following proposal.

This proposal was submitted to ISO/TC 97 plenary meeting (Paris 17-18 October, 1962) and approved in the form of the following resolution :

Resolution no. 1

ISO/TC 97 approves the circulation of document ISO/TC 97/WG B (Sec. 12)30 as a first draft proposal through the TC Secretariat to :

a) - the members "P" and "O" of ISO/TC 97

b) - all ISO/TC 97 Working Groups

c) - the Secretariat of ISO/TC 95 and more especially to Working Group H

d) - the Secretariat of ISO/TC 39 "Machine Tools"

e) - the international organizations and especially CCITT, ECMA, UIC.

ISO/TC 97 asks the Secretariat to convey to the Secretariat of WG B all the comments it receives from the member countries and other organizations to which the first draft will have been sent in order to allow the WG to consider them and to proceed with the preparation of a second draft if need be.

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AVANT-PROJET ISO

REPERTOIRES CODES A 6 ET 7 ELEMENTS BINAIRES D'INFORMATION DESTINES AUX ECHANGES D'INFORMATION ENTRE MATERIELS DE TRAITEMENT DE L'INFORMATION

1 - Les tableaux de la présente Recommandation contiennent deux jeux de caractères à usage général comprenant des lettres, des chiffres, des signes de ponctuation, des symboles spéciaux et des commandes ainsi que leur représentation codée.

Ces tableaux sont complétés par une légende et des commentaires.

2 - Ces jeux de caractères codés peuvent être utilisés essentiellement pour l'échange d'informations entre les systèmes de traitement de l'information et les matériels associés. Ils peuvent être considérés comme des alphabets de base au sens abstrait.

3 - Ces alphabets de base peuvent être représentés sur des supports variés avec des codes logiquement apparentés selon les cas. Par exemple, cela pourrait inclure des systèmes de transmission, des bandes perforées et rubans magnétiques et, ainsi, permettre l'échange de données qui prendraient place, soit indirectement au moyen d'un enregistrement intermédiaire sur support matériel continu, soit par liaison électrique locale de ces différentes unités (telles que appareils d'entrée et de sortie et calculateurs électroniques) ou au moyen de matériel de transmission des données.

4 - Les besoins en représentation graphique et en fonctions de commande nécessaires au traitement de l'information et à la programmation, en liaison avec les caractéristiques des calculateurs et de leurs équipements auxiliaires ont été pris en considération pour déterminer les répertoires.

5 - L'un de ces jeux peut être utilisé pour les applications dans lesquelles des caractères à 6 moments sont nécessaires et suffisants. L'autre jeu utilise des caractères à 7 moments, ce qui agrandit le répertoire pour les "symboles graphiques" et les "commandes", en particulier, ceux destinés à l'échange de l'information par signaux électriques transmis.

Ces deux jeux sont compatibles en ce sens qu'ils sont logiquement apparentés et ceci facilite la conversion des données entre les jeux de code à 6 et 7 moments.

6 - Les moyens de coder ces jeux de caractères pour la transmission, l'enregistrement sur supports matériels, en tenant compte du besoin de contrôler les erreurs, pourrait faire l'objet de furures recommandations.

ISO Draft Proposal

6 and 7 bit character codes for Information Processing Interchange

1 - The tables in this recommendation present 2 character sets for general usage, including letters, figures, punctuation marks, special symbols and controls, with their coded representation.

These tables are completed by a legend and comments.

2 - These coded character sets may be used primarily for the interchange of information among data processing systems and associated equipment. They may be regarded as basic alphabets in the abstract sense.

3 - These basic alphabets may be implemented in various media with logically related codes, as appropriate. For example, this could include transmission systems, punched tape and magnetic tape, and thus permit interchange of data to take place either indirectly by means of an intermediate recording in a continuous physical medium, or by local electrical connection of these various units (such as input and output devices and computers) or by means of data transmission equipment.

4 - For the determination of character sets, the requirements for graphics and controls in data handling and programming, in accordance with computer and ancillary equipment characteristics, have been taken into account.

5 - One of these sets may be used for those applications in which 6-bit characters are necessary and sufficient. The other set uses 7-bit characters which enlarges the repertoire for both the "graphics" and the "controls", especially those for interchange of information by transmitted electric signals.

These two sets are compatible in that they are logically related, and this facilitates the conversion of data between the 6-bit and the 7-bit coded sets.

6 - The means of encoding these character sets for transmission, for recording on physical media, and taking into account the need for error checking should be the subject of future Recommendations.

Caractères codés pour l'échange d'information entre matériels de traitement de l'information

TABLEAU DE CODE A 6 ELEMENTS D'INFORMATION

Character codes for information interchange among information processing systems

TABLE OF THE 6 BIT SET

b_6				0	0	1	1
b_5				0	1	0	1
b_4	b_3	b_2	b_1				
0	0	0	0	F_0 Space	0	Null	P
0	0	0	1	F_1 (HT)	1	A	Q
0	0	1	0	F_2 (LF)①	2	B	R
0	0	1	1	F_3 (VT)	3	C	S
0	1	0	0	F_4 (FF)	4	D	T
0	1	0	1	F_5 (CR)①	5	E	U
0	1	1	0	SO	6	F	V
0	1	1	1	SI	7	G	W
1	0	0	0	(	8	H	X
1	0	0	1	)	9	I	Y
1	0	1	0	*	: ②	J	Z
1	0	1	1	+	; ②	K	④ or [
1	1	0	0	, (Comma)	< or CS ③	L	④ or \ ⑤
1	1	0	1	-	= or % ③	M	④ or]
1	1	1	0	.	> or & ③	N	Escape
1	1	1	1	/	? or ' ③	O	Delete

Novembre 1962

November 1962

TABLEAU DE CODE A 7 ELEMENTS D'INFORMATION

TABLE OF THE 7 BIT SET

b7				0	0	0	0	1	1	1	1
b6				0	0	1	1	0	0	1	1
b5				0	1	0	1	0	1	0	1
b4	b3	b2	b1								
0	0	0	0	TC_0(Null)	DC_0(DLE)	Space	0	@	P	Reserved for future Standardisation ⑥	Reserved for future Standardisation ⑥
0	0	0	1	TC_1(SOM)	DC_1	!	1	A	Q		
0	0	1	0	TC_2(EOA)	DC_2	"	2	B	R		
0	0	1	1	TC_3(EOM)	DC_3	#	3	C	S		
0	1	0	0	TC_4(EOT)	DC_4(Stop)	CS	4	D	T		
0	1	0	1	TC_5(WRU)	Error	%	5	E	U		
0	1	1	0	TC_6(RU)	Sync.	&	6	F	V		
0	1	1	1	TC_7(Bell)	LEM	' (Apost.)	7	G	W		
1	0	0	0	FE_0	IS_0	(	8	H	X		
1	0	0	1	FE_1(HT)	IS_1	)	9	I	Y		
1	0	1	0	FE_2(LF)①	IS_2	*	: ②	J	Z		
1	0	1	1	FE_3(VT)	IS_3	+	; ②	K	④ [		
1	1	0	0	FE_4(FF)	IS_4	, (Comma)	<	L	④ \⑤		⑦
1	1	0	1	FE_5(CR)①	IS_5	-	=	M	④]		
1	1	1	0	SO	IS_6	.	>	N	↑		Escape
1	1	1	1	SI	IS_7	/	?	O	←		Delete

Novembre 1962

November 1962

NOTES RELATIVES AUX TABLEAUX

(1) Les commandes CR et LF sont destinées au matériel d'impression qui a besoin de combinaisons séparées pour le retour du chariot et le remplissage d'une ligne.

Comme solution de remplacement pour les machines n'utilisant qu'une seule combinaison pour l'opération combinée "Retour du chariot" et "Interligne"(appelée New-Line), NL sera codée en F2 ou FE 2. Dans ce cas, F 5 sera considéré comme une commande disponible et FE 5 comme "Retour arrière" (Backspace = BS).

Si ce dernier type de machine doit pouvoir fonctionner en combinaison avec le premier, il peut être nécessaire de prendre des mesures pour introduire le caractère CR.

② Si on a besoin de 10 et 11 comme caractères uniques (par exemple, pour le symbole de la Livre Sterling), ceux-ci devront prendre la place de : et de ; respectivement.

③ On peut choisir l'un ou l'autre des symboles de remplacement indiqués à chacune de ces positions dans les tableaux ; mais cela exige un accord entre l'émetteur des informations et celui qui les reçoit.

④ Dans les pays dont l'alphabet comporte plus de 26 lettres, et au maximum 29, les symboles situés dans les positions indiquées par ④ peuvent être remplacés par les lettres supplémentaires de l'alphabet étendu.

⑤ Si un deuxième symbole monétaire est nécessaire, il devra prendre la place de \ .

⑥ Réservé pour une future normalisation, n'est donc pas disponible pour un choix individuel.

⑦ Réservé pour une future normalisation, à utiliser comme signal "acknowledge"

NOTES ABOUT THE TABLES

① The controls CR and LF are intended for printer equipment which requires separate combinations to return the carriage and feed a line.

As an alternative, for equipment which uses a single combination for a combined carriage-return and line-feed operation (called New-Line), NL will be coded at F 2 or FE 2. Then F 5 will be regarded as a Spare Control, and FE 5 will be regarded as Backspace BS.

If the latter type of equipment has to inter-work with the former, it may be necessary to take steps to introduce the CR character.

② If 10 and 11 as single characters are needed (for example, for Sterling currency), they should take the place of : and ; respectively.

③ Either of the two alternative symbols shown in each of these positions in the Table may be chosen ; but this requires agreement between sender and recipient of data.

④ In those countries in which the alphabet includes more than 26 letters, but no more than 29, the symbols located in the position indicated by 4 may be replaced by the additional characters of the extended alphabet.

⑤ If a 2nd currency sign is required, it should take the place of \

⑥ Reserved for future standardization work i.e. not available for individual choice

⑦ Reserved for future standardization for use as an acknowledge signal.-

.../...

LEGENDE

Ack - (Acknowledge) : Accusé de réception
Bell - Alarme ou signal d'appel
CR - (Carriage return) : Retour de chariot
CS - (Currency sign) : Symbole monétaire, par exemple $; £, F .
DC - (Device Control) : Commande de dispositif
DLE - (Data link escape) : "escape" de transmission
EOA - (End of address) : Fin d'adresse
EOM - (End of message) : Fin de message
EOT - (End of transmission) : Fin de communication
F - (Function) : Fonction
FE - (Format effector) : Commande de mise en page
FF - (Form feed) : Saut de papier
HT - (Horizontal tabulation) : Tabulation
IS - (Information separator) : Séparateur d'information
LEM - (Logical End of Media) : Fin logique de support
LF - (Line feed) : Interligne
NL - (New Line) : Retour à la ligne
RU - (Are you ... ?) : Etes-vous ... ?
SI - (Shift-in) : En code
SO - (Shift-out) : Hors code
SOM - (Start of Message) : Début de message
Sync - (Synchronous idle) : Synchronisation
TC - (Transmission Control) : Commande de transmission
VT - (Vertical tabulation) : Saut de ligne
WRU - (Who are you ?) : Qui êtes-vous ?

.../...

LEGEND

Ack - Acknowledge
Bell - Alarm or attention signal
CR - Carriage return
CS - Currency-sign - For example : $, £, Fr.
DC - Device control
DLE - Data link escape
EOA - End of address
EOM - End of message
EOT - End of transmission

F - Function
FE - Format effector
FF - Form feed
HT - Horizontal tabulation
IS - Information separator
LEM - Logical end of media
LF - Line feed
NL - New line
RU - Are you ... ?
SI - Shift-in
SO - Shift-out
SOM - Start of message

Sync - Synchronous idle
TC - Transmission control
VT - Vertical tabulation
WRU - Who are you ?

NOTES EXPLICATIVES SUR LES TABLEAUX DE CODES

Ces notes explicatives ne doivent pas être incluses dans le projet de norme en tant que telles, mais contribuer à la compréhension des tableaux. Un travail supplémentaire doit être fait : la définition des applications d'un grand nombre de caractères fonctionnels avant qu'un document approprié puisse être établi en vue de son inclusion dans la norme.

Beaucoup de commandes généralisées TC, FE, DC, IS et F, ont une signification précise placée en regard entre parenthèses, choisie d'après la terminologie des équipements de télécommunication et d'impression caractère par caractère. Pour d'autres types d'équipement, des significations différentes mais apparentées peuvent être associées avec certaines des commandes généralisées, mais ceci exige l'accord entre l'émetteur et le destinataire des données.

TC – (Transmission Control) – Commande de transmission
Caractère fonctionnel destiné à commander ou à faciliter la transmission d'information dans les réseaux de télécommunication.

En voici des exemples :

TC_0 (NULL) – Caractère auquel aucun sens n'a été attribué en raison de ses caractéristiques uniques qui peuvent être une source de difficultés pour certains supports et sur certains maillons de transmission.

TC_1 (SOM) – (Start of Message) – début de message

TC_2 (EOA) – (End of Address) – fin d'adresse

TC_3 (EOM) – (End of Message) – fin de message

TC_4 (EOT) – (End of Transmission) – fin de communication

TC_5 (WRU) – (Who are you ?) – Qui êtes-vous ? – Demande d'identification

TC_6 (RU) – (Are you...) – Etes-vous...
RU fournit un moyen de demander l'identification d'une certaine station éloignée par exemple : RU (êtes-vous) la station ABC ?

TC_7 (BELL) – Pour la commande des équipements de signal d'alarme ou d'appel.

FE – (Format Effector)
Caractère fonctionnel qui commande la présentation ou la mise en page de l'information dans les supports d'entrée-sortie.

FE_0 – Fonction non encore définie.

FE_1 (HT) – (Horizontal Tabulation) – Tabulation
Caractère de présentation qui commande le mouvement d'une position d'impression à la suivante dans une série de positions prédéterminées le long de la ligne d'impression.

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EXPLANATORY COMMENTS ON THE CODE TABLES

These explanatory comments are not to be included in the proposed standard as such, but to contribute to the understanding of the Tables. Additional work must be done in defining the application of many of the functional characters before a suitable document can be produced for inclusion in the standard.

Many of generalized controls TC, FE, DC, IS, and F, have specific meanings shown against them in parentheses, chosen from the terminology used for telecommunication and character-by-character printer equipment. In other types of equipment different, but related meanings may be associated with certain of the generalized controls, but this requires agreement between sender and recipient of data.

TC - Transmission Control - A functional character intended to control or facilitate transmission of information over telecommunication networks.

Examples are :

TC_0 (NULL) - A character to which no meaning has been assigned in view of its unique characteristics which may be a source of difficulty in certain media and on certain transmission links.

TC_1 (SOM) - Start of Message

TC_2 (EOA) - End of Address

TC_3 (EOM) - End of Message

TC_4 (EOT) - End of Transmission

TC_5 (WRU) - Who are you ? - Identification request

TC_6 (RU) - Are you ... - RU provides a means of requesting identification of a specific distant station, i.e. RU station ABC ?

TC_7 (BELL) - For control of alarm or attention devices

FE - Format Effector - A functional character which controls the layout or positioning of information in Input/Output media.

FE_0 - Function not yet defined

FE_1 (HT) - Horizontal Tabulation - A layout character which controls the movement of the printing position to the next in a series of predetermined positions along the printing line.

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FE$_2$ (LF) - (Line Feed) - Interligne
Caractère de présentation qui commande le mouvement d'une position d'impression à la ligne d'impression suivante.

FE$_3$ (VT) - (Vertical Tabulation) - Saut de ligne
Caractère de présentation qui commande le mouvement d'une position d'impression à la suivante dans une série de lignes d'impression prédéterminées.

FE$_4$ (FF) - (Form Feed) - Saut du papier - Caractère de présentation qui commande le mouvement d'une position d'impression à la première ligne d'impression prédéterminée de l'imprimé suivant.

FE$_5$ (CR) - (Carriage Return) - Retour du chariot
Caractère de présentation qui commande le mouvement d'une position d'impression à la première position d'impression de la même ligne d'impression.

NL - (New Line) - Retour à la ligne
Caractère de présentation qui commande le mouvement d'une position d'impression à la première position d'impression de la ligne d'impression suivante.

BS - (Back Space) - Retour arrière
Caractère de présentation qui commande le mouvement d'une position d'impression à un pas d'impression en arrière sur la même ligne d'impression.

SO & SI - (Shift-out et Shift-in)
Le caractère "Shift-out" signifie que tous les caractères qui suivent seront interprétés comme étant en dehors du jeu normal de caractères jusqu'à ce qu'on atteigne un caractère "Shift-in". Le caractère "Shift-in" signifie que tous les caractères qui suivent seront interprétés comme étant à l'intérieur du jeu normal de caractères jusqu'à ce qu'on atteigne un caractère "Shift-out".

Un travail plus approfondi sera nécessaire pour définir le jeu normal.

DC - (Device Control) - Commande de dispositif
Caractère fonctionnel destiné à la commande de dispositifs auxiliaires, associés à des systèmes de traitement de l'information ou de télécommunication, plus spécialement des mécanismes d'établissement ou de coupure d'une communication.

DC$_0$ (DLE) - (Data Link Escape)
Caractère fonctionnel qui, lorsqu'il est inséré, peut changer le sens du caractère le suivant immédiatement. On utilisera ce caractère exclusivement pour les réseaux de transmission des données. L'application précise de cette paire de caractères reste encore à définir.

..../...

FE_2 (LF) - Line Feed - A layout character which controls the movement of the printing position to the next printing line.

FE_3 (VT) - Vertical Tabulation - A layout character which controls the movement of the printing position to the next of a series of predetermined printing lines.

FE_4 (FF) - Form Feed - A layout character which controls the movement of the printing position to the first predetermined printing line on the next form.

FE_5 (CR) - Carriage Return - A layout character which controls the movement of the printing position to the first printing position on the same printing line.

NL - New Line - A layout character which controls the movement of the printing position to the first printing position of the next printing line.

BS - Back Space - A layout character which controls the movement of the printing position one printing space backwards on the same printing line.

SO & SI - Shift-out and Shift-in - The Shift-out character means that all the character which follow shall be interpreted as outside of the normal set of characters until a Shift-in character is reached. The Shift-in character means that all the characters which follow shall be interpreted as within the normal set of characters until a Shift-out character is reached.

Further work will be needed to define the normal set.

DC - Device Control - A functional character for the control of ancillary devices associated with data processing or telecommunication systems, more especially switching devices "on" or "off".

DC_0 (DLE) - Data Link Escape - A functional character which, when inserted, may change the meaning of the next following character. This character is intended for exclusive use on data transmission networks. Specific application of this pair of characters has yet to be defined.

DC_1, DC_2, DC_3 - An example of how device control characters could be used in a specific tape system employing two ancillary tape punches and one ancillary tape reader is as follows :

DC_1 - Punch one "On"
DC_2 - Punch two "On"
DC_3 - Tape reader "On"

DC_4 (Stop) - This device control character is used to interrupt or "turn off" ancillary devices.

.../...

DC_1,DC_2,DC_3 - Ce qui suit est un exemple de la façon d'utiliser les caractères de commande de dispositifs dans un système donné de bandes employant deux perforateurs de bandes auxiliaires et un lecteur de bandes auxiliaires :

DC 1 - Perforateur n° 1 "marche" "On"

DC 2 - Perforateur n° 2 "marche" "On"

DC 3 - Lecteur de bande "marche" "On"

DC_4 (Stop) - Ce caractère de commande d'équipement est employé pour interrompre ou couper le contact ("turn off") des équipements auxiliaires.

Error - Caractère destiné à être utilisé pour identifier une information erronée habituellement dans un ensemble de caractères.

Sync - Caractère fonctionnel utilisé pour synchroniser les transmetteurs et récepteurs.

LEM - (Logical End of Media) - Fin logique de support
Caractère fonctionnel qui identifie la fin de la partie utilisée, ou désirée de l'information enregistrée sur un support. La position de ce caractère ne correspond pas nécessairement à la fin matérielle du support.

IS - (Information Separator) - Séparateurs d'informations
Caractère qui est employé pour séparer et qualifier les informations dans un sens logique. C'est un groupe de caractères qui est destiné à être utilisé dans un ordre hiérarchique.

Space - Caractère graphique de non-impression normalement utilisé pour séparer les mots.
C'est également un caractère de présentation qui commande le mouvement d'une position d'impression d'un pas d'impression en avant sur la même ligne d'impression.

Ack - (Acknowledge) - Accusé de réception
Caractère fonctionnel qui donne une confirmation positive.

Escape - Caractère fonctionnel qui, lorsqu'il est inséré, peut modifier la signification du caractère unique qui le suit immédiatement.

Par exemple :

Les deux caractères peuvent être interprétés comme un caractère graphique ou fonctionnel extérieur au jeu normalisé ; ou
La signification de ces deux caractères peut être : "Allez dans le code X et restez-y" dans ce cas, son utilisation est celle d'un transfert avec verrouillage.

Delete - Ce caractère est employé surtout pour rayer ou effacer des caractères faux ou incorrects sur une bande perforée.

CS - (Currency Symbol) - Symbole monétaire
L'emploi de ce caractère peut varier d'un pays à l'autre.

F - Caractère fonctionnel qui, dans les jeux à 6 moments, peut avoir les significations combinées ou alternées de IS ou FE.

Error - A character which is intended to be used to identify erroneous information usually in an assemblage of characters.

Sync - A functional character which is used to synchronise transmitters and receivers.

LEM - Logical End of Media - A functional character which identifies the end of the used, or wanted portion, of information recorded on a medium. The position of this character does not necessarily correspond to the physical end of the medium.

IS - Information Separator - A character which is used to separate and qualify information in a logical sense. This is a group of characters which is intended to be used in a hierarchical order.

Space - A non-printing graphic character normally used to separate words. It is also a layout character which controls the movement of the printing position one printing position in the forward direction.

Ack - Acknowledgement - A functional character which provides a positive confirmation.

Escape - A functional character which, when inserted, may change the meaning of the next single following character.

For example :

The pair of characters may be interpreted as a graphic or functional character not included in the standard set ; or

The meaning of these two characters may be : "Go into Code X and stay in it", thus being used as a locking shift.

Delete - This character is used primarily to "erase" or "rub out" erroneous or unwanted characters in punched tape.

CS - Currency Symbol. The use of this character may vary from country to country.

F - A functional character which, in 6-bit sets, may have the combined or alternative meanings of IS or FE.

January 2, 1963

EIA Engineering Office
11 West 42nd Street
New York 36, New York

RE: Standard Proposal No. 790-Standard Magnetic Tape

Dear Sir:

Honeywell has reviewed the Standard Proposal Number 790 on Standard Magnetic Tape, dated December 4, 1962, and does not approve the proposal as presented.

This Proposed Standard is inconsistent with the X3.2 proposed American Standard Code for Information Interchange. If this standard is being proposed as a "defacto standard" to accomodate existing hardware now being utilized, it should be so noted. The Standards Proposal states that this tape is to be used for intercommunication or "information interchange" between data processing systems. As such, this standard cannot provide a capability of direct implementation of the ASA X3.2 proposed coded character set designed specifically for information interchange or "intercommunication" between data processing systems. An indication should be made within the section entitled SCOPE that the standard applies to "contemporary" equipment. We are aware that there is currently work being prepared for consideration in the Joint Task Group TR27.6.3 on magnetic tape standards of eight and more tracks, and feel that references should be made to these activities in the Proposal Standard.

Immediate attention should be directed to the development of a magnetic tape standard that would provide for a direct implementation of the proposed American Code for Information Interchange and future requirements of Magnetic Tape.

Sincerely yours,

RFC:RMM:jl;adp
Attachment

cc H. Hayman
R. B. Lawrence
R. M. Muise
C. A. Phillips - X3
R. E. Utman - BEMA

CBI 67/1/11

MEETING NOTICE

ELECTRONIC INDUSTRIES ASSOCIATION

ENGINEERING DEPARTMENT

CHANGE OF MEETING DATE

December 27, 1962

ORGANIZATION: Joint Task Group for Input/Output on Magnetic Tape

CHAIRMAN: Mr. Harry Hayman

DATE: The Meeting Date of this Task Group has been changed from

Tuesday, January 15, 1963

to

Monday, January 14, 1963 TIME: 10:00 AM

PLACE: EIA Engineering Office - Room 2260
11 West 42nd Street
New York 36, New York

AGENDA:

1. Discuss status X-3.2 language proposals and Steering Committee recommendations.
2. Review Physical Standards.
3. Discuss the eight track or alternate standards.
4. Discuss International activities.

……

PLEASE CHECK AND SIGN THIS FORM AND RETURN IT PROMPTLY TO THE CHAIRMAN

Mr. Harry Hayman, Code MIC-D
National Aeronautics & Space
Administration
Washington 25, D. C.

Joint TG Input/Output on Magnetic Tape
January 14, 1963 - 10:00 AM
EIA Engineering Office
11 W. 42nd St., New York 36, N. Y.

____________________ I will attend ____________________ I will not attend

__________________________________ Name

__________________________________ Company

__________________________________ Address

10161:1-1:12/62(TR-27.6.3)

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ASSOCIATION
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MEETING NOTICE

MR. RICHARD M. MUISE
MINNEAPOLIS-HONEYWELL REG. CO.
ENGINEERING & RESEARCH CENTER
151 NEEDHAM STREET TR-27.6.3
NEWTON HIGHLANDS 61, MASS.

DPSD:LLG:ef

8 JAN 1963

Memorandum To: Chairman X3

From: Chairman X3.2

Subject: Resolutions of X3.2 pertinent to the X3 meeting

Enclosure:
(1) Copy of X3.2 resolutions
(2) X3.2 Resolution of 12 Sep 1962 on Magnetic Tape
(3) Letter from Chairman, X3.2 to Joint Task Group, Magnetic Tape, of 1 Nov 1962

Resolutions approved by X3.2 pertinent to the proposed ASCII and X3 consideration are attached as enclosure (1). An additional resolution directed to the Joint Task Group, Magnetic Tape, is attached as enclosure (2) for such use as may be applicable. It has previously been forwarded directly to the Joint Task Group. A copy of a letter from the Chairman of X3.2 to the Joint Task Group, Magnetic Tape, is attached as enclosure (3) for information purposes.

I support what I believe to be the majority view of X3.2 members that code design responsibility for the various media should be centralized in one group. This view is embodied in the X3.2 resolution of 2 November 1962 on interpretation of X3.2 scope, as well as the resolution of 6 December 1962 recommending that working groups on code (logical) representations of the proposed ASCII be directed by X3.2. Many present information processing systems require extensive interchange of information between the various record media either via telecommunication systems or in local data capture and conversion operations. This trend to comprehensive integrated systems in many organizations is accelerating. Code design must, therefore, be approached from a systems standpoint. I believe this systems approach to media code design can best be achieved if responsibility is lodged in X3.2.

In the past year, it has come to my attention that on several occasions a number of groups concerned with the design of information systems and equipment have expressed a desire to make use of the proposed ASCII in their projects. These groups have been following the progress of this proposal through the ratification process with great interest. Although their need is critical, these groups hesitate to proceed prior to the acceptance of the proposed ASCII as an American Standard. One spokesman for a Department of Defense agency stated recently that a one year delay in adopting the proposed ASCII for certain systems which they have under development would double the cost of converting to this code, and would delay completion of these projects by one year.

CBI 67/1/11

Subj: Resolution of X3.2 pertinent to the X3 Meeting

International considerations also require that the code proposal be resolved as soon as practicable.

Progress in media implementation of the proposed ASCII has been handicapped because the ratification process has not been completed. It seems probable that this resistance will continue until ratification is accomplished.

For such reasons as these, I believe the American Standard Code proposal should be forwarded for ASA Review Board consideration without further delay.

L. L. Griffin
Chairman, X3.2 Subcommittee

Copy to: Secretary X3.2

Business Equipment Manufacturers Association
235 East 42nd Street, New York 17, New York — MU[illegible]

January 4, 1963

ESRB Meeting #2

O'Brien Resolution:

"We accept the principle of a single code for information interchange. This code will be universally useful only when it can be adapted to the common methods of machine to machine communication, i.e., paper tape, punch cards, and magnetic tape. We therefore believe submission of the PASCII code to ASA is premature. We recommend to X3 that they institute a scheduled program of developing such adaptations with the objective of submitting "ASA a family of PASCII codes, that will meet the needs of the industry by the end of 1963 and that X3 provide the organization and manpower needed for this task."

VOTE Yes - 12
No - 3

Motion carried, and becomes the sponsor's recommendation to X3 & ASA

Formerly Office Equipment Manufacturers Institute

Memorandum

FOR ALL INTERNAL COMPANY CORRESPONDENCE

1120 CSD

MEMO-RMM-#47
DO-#271-511

DATE January 3, 1963 COPIES TO:

TO Those Listed

FROM R.M. Muise

SUBJECT Teletype Model 33 Send-Receive Page Printer Set and Related Eight Level Data Interchange Code

REFERENCE Technical Manual Model 32 and 33, Send-Receive Page Printer Set (KSR) Bulletin 273-B, Teletype Corporation, 1 October 1962 (W.A. Budlong)

SUMMARY

The Teletype Model 33 Send-Receive Page Printer set (Printer) is an electromechanical apparatus that provides terminal facilities for exchanging page-printed messages via appropriate transmission facilities including telegraph lines, telephone networks, and radio channels.

The Model 33 Printer has a four row keyboard and uses an eight level data interchange code (ASA X 3.2 Proposed American Code For Information Interchange) with an 11-unit transmission pattern. The following figures are presented:

Figure 1..........Four Row Keyboard Arrangement

Figure 2..........Eight Level Data Interchange Code - Character Arrangement

Figure 3..........Current Waveform For Letter "U"

Figure 4..........Encoding Of Answer-Back Drum

This document is intended as a general reference only. The Referenced Manual (Bulletin 273B) presents a detailed description of the mechanics and operational characteristics of the Model 33 Printer.

MODEL 33 PRINTER - GENERAL INFORMATION

The Model 33 Printer is an electromechanical device providing terminal facilities for exchanging page-printed messages via appropriate transmission facilities including telegraph lines, telephone networks, and radio channels. It is designed for light-duty service in applications where the operation is not expected to exceed approximately two hours per day. Transmission and reception are effected by a START-STOP signalling code (also referred to as a teletypewriter code). The Printer operates at speeds up to 100 words per minute.

CBI 67/1/6

The Model 33 has a Four Row Keyboard (resembles a typewriter keyboard) and uses an eight-level code with an 11-unit transmission pattern. Illustrations depicting the keyboard, character code arrangement, and transmission pattern are presented as Figures 1,2 and 3 respectively. The characters on the lower keyboard, including the numerals in the upper row, can be transmitted without the use of Shift operation. A SHIFT is used to transmit the printing characters (such as &, % and #) appearing on the upper keytops. Certain character symbols ([,\,]) have been left off the keyboard to avoid more than two character representations on a single key, but these may be printed by use of SHIFT and the K,L, and M keys respectively. A control (CTRL) key is used to transmit the control functions (such as WRU, BELL, and RETURN). The SHIFT or CTRL key must be held down while the associated character key is depressed. Auxiliary keys such as Line-Break (BREAK), Repeat (REPT), and Answer-Back Activation (HERE IS) are located to the right of the keyboard.

In conjunction with a distributor mechanism on the printer assembly, the keyboard provides facilities for transmission of messages by the manual operation of a group of keys. It includes the following components:

a. A space bar and keys similar to those on a typewriter.

b. A code bar mechanism which converts the manual depression of the keys to mechanical positions corresponding to the proper code combinations.

c. A contact mechanism in which the code bar mechanism sets up the code combinations to START-STOP signals by the distributor.

d. A frame and two side brackets which support the mechanism and a cover which serves as a guide for the keys.

e. A cable with connector which electrically interconnects the keyboard with the call control assembly.

An optional accessory is an answer-back mechanism which in conjunction with the distributor will automatically transmit a sequence of characters for station identification. It may be coded to transmit up to 20 characters (including spaces) and maybe activated locally or remotely. Coding messages normally begin and end with RETURN (Carriage Return) and LINE FEED. This assures that messages will appear at the beginning of a line on distant printers and that over-printing of messages will not occur. See Figure 4 for character coding of answer-back drum.

MODEL 33 PRINTER-EIGHT LEVEL CODE

The data interchange code accomodated by the Model 33 Printer is the Bell Lab and Teletype Corporation interpretation of the proposed ASA X3.2 American Code For Information Interchange (See Figure 2). Since it has eight intelligence elements and its START-STOP elements total 3 units of time (1-START/2-STOP), it is an eight level code with an eleven-unit transmission pattern (See Figure 3). However, at present it utilizes only the first seven intelligence elements, the eighth always being transmitted as marking. Thus, it has two to the seventh power, or 128, available permutations (corresponds to ASA X3.2 Code Set). Of these combinations 64 are assigned to printing characters. The rest are devoted to control (non-printing) characters or are unassigned.

This code structure is applicable to the heavier duty Model 35 Printer which utilizes the same keyboard arrangement as the Model 33. Therefore, certain control functions (TAB and VT) do not apply to the Model 33 but are for use on the Model 35.

DEFINITION OF TERMS

Many controls such as Line Feed, Carriage Return, Tabulation and Form Feed have been in such general use as to require no explanation. Definitions of other controls are as follows:

ALT MODE	Provided for a future means of communicator escape - primarily to be utilized as a switching function and/or for set expansion
ACKNOWLEDGE (ACK)	Intended as the response to a query or message successfully received. Cannot be generated via keyboard. Station receiving generates via internal drum control.
TAPE	Turns on Tape Punch mechanism attached to Printer.
~~TAPE~~	Turns off Tape Punch mechanism attached to Printer.
X OFF	Transmitter Off is an auxiliary device control generally required in automatic information processing and is provided for use as required in specific system design.
X ON	Transmitter On is an auxiliary device control generally required in automatic information processing and is provided for use as required in specific system design. X ON does not appear on Keyboard, but may be generated by depressing CTRL and Q Keys.
EOT	End of Transmission indicates the end of transmission of one or more messages.
RU	Are You provides a means of requesting identification of a specific distant station, i.e. RU station ABC?
WRU	Who Are You provides a means of requesting identification of a distant station.
BELL	Means of getting attention of operator. Depress BELL and REPT Keys.
RUB OUT	Delete function (Perforated Tape Systems)
HERE IS	On Printers with answer-back mechanism, provides automatic transmission of a predetermined sequence of characters to identify the station.
BREAK	Used as a means of interrupting transmission from a distant station.

REPT	Provides repeated transmission of any character when held down with another Key.
SPACE BAR	Spaces printing carriage without printing.

RICHARD M. MUISE

RMM:jl

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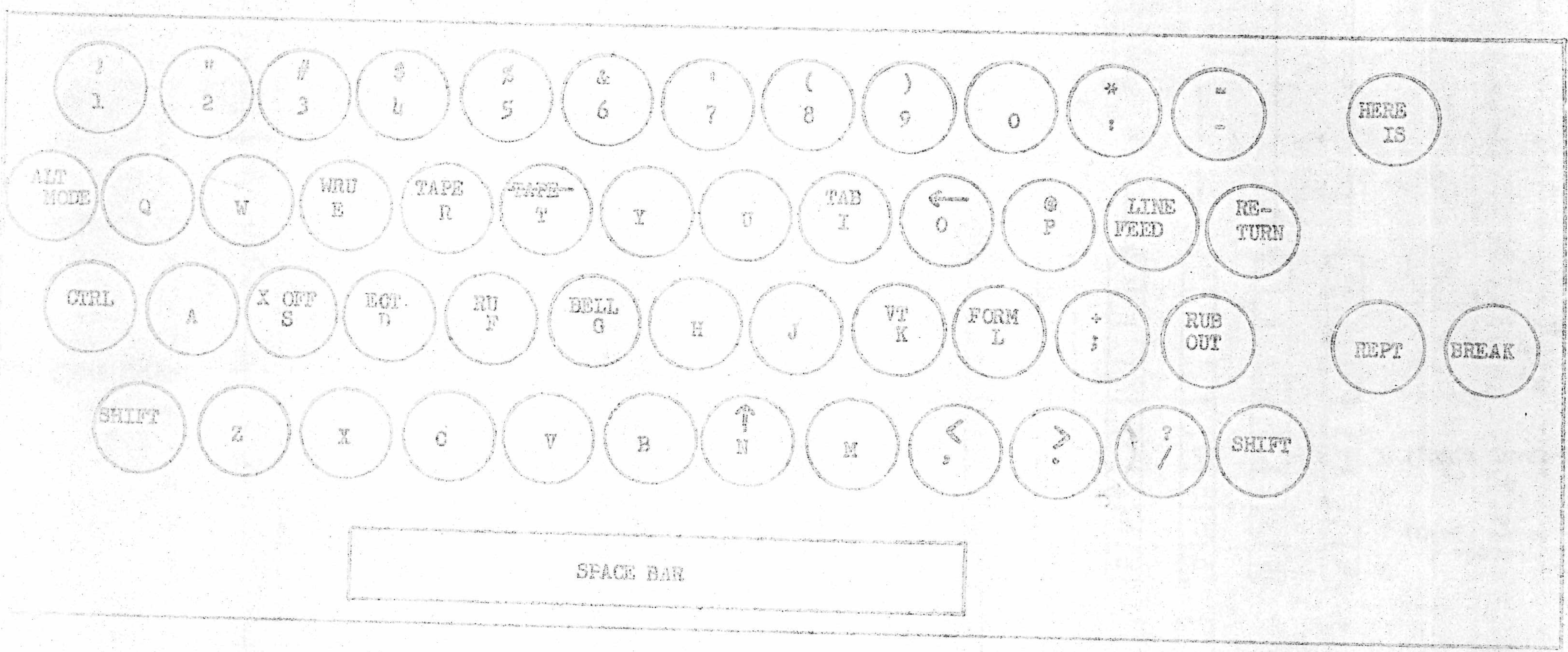

Figure 1. Teletype Model 33 - Four Row Keyboard Arrangement

NOTE: The following characters and control are not shown on the Keyboard Face but may be obtained as follows:

[Depress SHIFT and LETTER K
\ Depress SHIFT and LETTER L
] Depress SHIFT and LETTER M
X ON Depress CTRL and LETTER Q

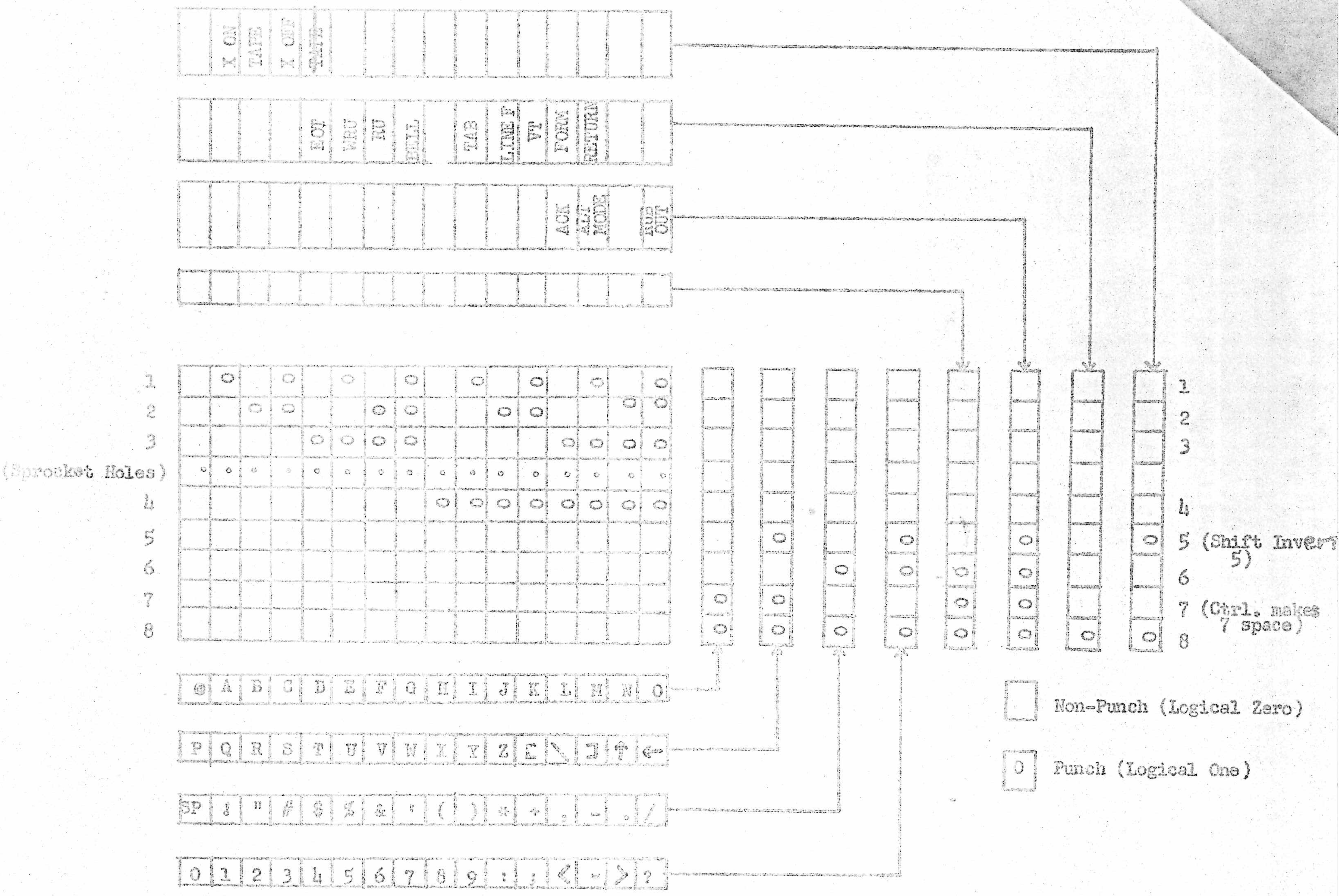

Figure 2. Teletype Model 33 - Eight Level Data Interchange Code-Character Arrangement

3 January 1963

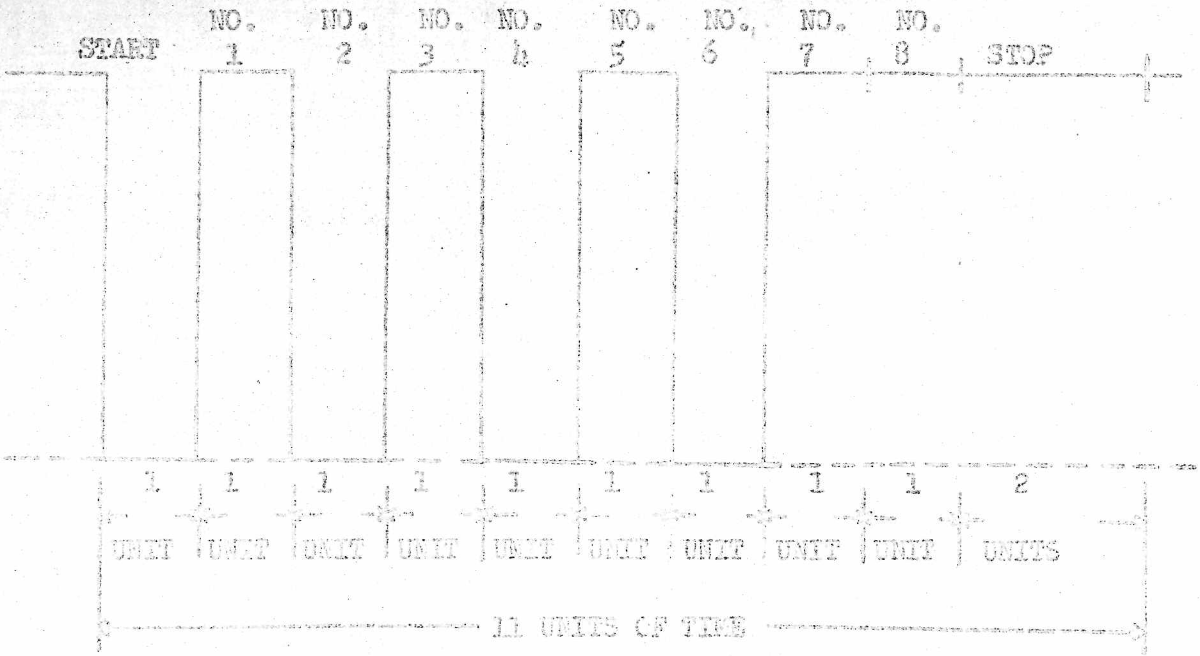

Figure 3. Teletype Model 33 - Current Waveform For Letter "U"

	CODE LEVELS												CODE LEVELS										
3	8	7	6				5	4	3	2	1	33	8	7	6				5	4	3	2	1
NULL	0											2	0		0				0			0	
SOM	0										0	3	0		0				0			0	0
EOA	0									0		4	0		0				0		0		
EOM	0									0	0	5	0		0				0		0		0
EOT	0								0			6	0		0				0		0	0	
WRU	0								0		0	7	0		0				0		0	0	0
RU	0								0	0		8	0		0				0	0			
BELL	0								0	0	0	9	0		0				0	0			0
FE_0	0							0				:	0		0				0	0		0	
HT	0							0			0	;	0		0				0	0		0	0
LF	0							0		0			0		0				0	0	0		
VT	0							0		0	0	=	0		0				0	0	0		0
FF	0							0	0				0		0				0	0	0	0	
CR	0							0	0		0	?	0		0				0	0	0	0	0
SO	0							0	0	0		@	0	0									
SI	0							0	0	0	0	A	0	0									0
DC_0	0						0					B	0	0								0	
XON	0						0				0	C	0	0								0	0
RION	0						0			0		D	0	0							0		
XOFF	0						0			0	0	E	0	0							0		0
RIOFF	0						0		0			F	0	0							0	0	
ERROR	0						0		0		0	G	0	0							0	0	0
SYNCH	0						0		0	0		H	0	0						0			
EOB	0						0		0	0	0	I	0	0						0			0
S_0	0						0	0				J	0	0						0		0	
S_1	0						0	0			0	K	0	0						0		0	0
S_2	0						0	0		0		L	0	0						0	0		
S_3	0						0	0		0	0	M	0	0						0	0		0
S_4	0						0	0	0			N	0	0						0	0	0	
S_5	0						0	0	0		0	O	0	0						0	0	0	0
S_6	0						0	0	0	0		P	0	0					0				
S_7	0						0	0	0	0	0	Q	0	0					0				0
SPACE	0		0									R	0	0					0			0	
!	0		0								0	S	0	0					0			0	0
"	0		0							0		T	0	0					0		0		
#	0		0							0	0	U	0	0					0		0		0
$	0		0						0			V	0	0					0		0	0	
%	0		0						0		0	W	0	0					0		0	0	0
&	0		0						0	0		X	0	0					0	0			
'	0		0						0	0	0	Y	0	0					0	0			0
(	0		0					0				Z	0	0					0	0		0	
)	0		0					0			0	[	0	0					0	0		0	0
*	0		0					0		0		\	0	0					0	0	0		
+	0		0					0		0	0	]	0	0					0	0	0		0
,	0		0					0	0			↑	0	0					0	0	0	0	
-	0		0					0	0		0	←	0	0					0	0	0	0	0
.	0		0					0	0	0		ACK	0	0	0				0	0	0		
/	0		0					0	0	0	0	ALTMODE	0	0	0				0	0	0		0
0	0		0				0					ESC	0	0	0				0	0	0	0	
1	0		0				0				0	DELETE	0	0	0				0	0	0	0	0

Feed Ratchet

Step Cam

Character Suppression

☐ Logical Zero   [0] Logical One

Figure 4.
Teletype Model 33 - Encoding of Answer-Back Drum   3 January 1963

Memorandum

FOR ALL INTERNAL COMPANY CORRESPONDENCE

DATE January 10, 1963 **COPIES TO:**

TO Those Listed

FROM R. F. Clippinger

SUBJECT X3.2 Coded Character Set

J. W. Anderson
R. M. Bloch
J. C. Chu
C. F. Dubay
J. J. Eachus
W. W. Finke
R. B. Lawrance
J. H. Levin
T. J. McNamara
O. C. Miles
R. Muise
F. G. Miller
C. H. Smith
J. E. Smith
J. R. Lamon

This set which is now known as PASCII was passed by X3 on September 10, 1962: 20 pro, 4 opposed, 5 abstentions. X4 voted against it. On October 31, the BEMA Standards Review Board (BSRB) met to form a sponsor's recommendation to ASA. (BEMA is sponsor for X3 via the DP Group and for X4 via the OM Group). The BSRB, unable to agree to recommend PASCII because of the opposition of the OMG, recommended that it be returned to X3.2 with a request that de facto standards for punched paper tape, punched cards and magnetic tape be defined and presented to ASA with PASCII as dual (conflicting) standards.

On December 5, 1962, C. A. Phillips, Director of DPG, wrote to ASA asking for direction. On December 21, Mr. R. E. Gay, Managing Director of ASA, replied saying in effect that ASA exists to eliminate conflicting standards and suggesting that X3 send PASCII along (with the views of X4 to be considered along with the views of other interested groups) or withdraw PASCII for more work.

As a result of this letter, the BSRB after much discussion on January 4, 1963, adopted the following resolution as the sponsor's recommendation:

> "We accept the principle of a single code for information interchange. This code will be universally useful only when it can be adapted to the common methods of machine to machine communication., i.e., paper tape, punch cards, and magnetic tape. We, therefore, believe submission of the PASCII code to ASA is premature. We recommend to X3 that they institute a scheduled program of developing such adaptations with the objective of submitting ASA a family of PASCII codes that will meet the needs of the industry by the end of 1963 and that X3 provide the organization and manpower needed for this task."

X3 will meet on January 24, 1963, and will probably pass PASCII to ASA as a proposed American Standard and then request X3.2 to proceed to append to PASCII recommendations for implementing it in punched paper tape, punched cards and magnetic tape.

B1 67/1/67

January 11, 1963

Memorandum to: Mr. C. D. Whitaker
Chairman, Joint Task Group for Punched Cards

With regard to your letter of December 4, 1962, to Mr. R. E. Blue, and our subsequent discussions at the committee meeting of January 8-10, I am forwarding the information necessary to incorporate Mr. Blue's proposal in the minutes of the January 8-10 meeting.

My understanding is that you will include the above as attachments to the minutes of our January 8-10 meeting and that you will also make some reference to these attachments in the minutes. I would suggest the following statement appear in the minutes:

> "The minutes of the September 17-18 meeting of the JTG/PG referred in paragraph 7 to a proposed punched card code submitted by Mr. Leon Bloom and a second coding proposal submitted by Mr. R. E. Mullendore. No reference was made in these minutes to a May 14, 1962, proposal by Mr. R. E. Blue based on IBM's present punched card code. In support of this proposal, Mr. Blue submitted the following documents which are attached:
>
> 1. "Survey of Punched Card Codes" an article by Mr. H. J. Smith and Mr. F. A. Williams in the December, 1961, issue of the "Communications of the ACM".
>
> 2. A copy of the British Standards Institution's document BSI 3174: 1959, titled "British Standard Specification for Alpha-Numeric Punching Codes for Data Processing Cards".
>
> 3. The third attachment describes the coded character representation adopted as a standard by the IBM Corporation for punched cards and magnetic tape. The card code part of this document is submitted to this Joint Task Group for consideration as an American Standard Card Code."

Please include also my letter of December 28, 1962, to Committee Members as an attachment to the minutes of the January 8-10 meeting. I would suggest the following reference in the minutes of the January 8-10 meeting.

> "A paper outlining the potential capability and limitations with respect to major types of existing IBM machines for handling the

CBI 67/1/11

direct representation of the PASCII 7-bit code in punched cards was presented by Mr. E. E. Plomondon. A copy of Mr. Plomondon's letter to Committee Members dated December 28, 1962, is attached."

E. E. Plomondon

EEP:gw

cc: Mr. H. A. Birdsall
Mr. J. B. Booth
Mr. T. R. Bousquet
Mr. W. J. Bowen
Mr. J. T. Ferry
Mr. L. L. Griffin
Mr. W. J. Kosinski
Mr. R. E. Mullendore
Mr. W. J. Osterman
Mr. R. L. Phelan
Mr. G. Spector

No attachments on the carbon copies.

271-59

LIAISON REPORT #4

TR-27.6.3/X3.2

The Joint Task Group for Input/Output on Magnetic Tape held a meeting at the Electronic Industries Association Headquarters, New York City, on January 14, 1963.

SUMMARY

The plan for restructuring the Joint Task Groups to coincide with the International Plan of Joint Working Groups was presented by Mr. R. E. Utman of BEMA. The present status of the proposed ASCII (X3.2 character code set) was reviewed for the group noting that it is presently in a stalled state and as yet has not been presented to ASA for approval.

The comment and balloting period for Standard Proposal 790 (Standard Magnetic Tape - 1/2 inch 7 track) has been extended to 4 February 1963. Consideration of comments postponed until all are received and will be an appropriate agenda item for the next meeting. General agreement that a rewording of SCOPE is required to remove inference that information interchange is possible since code structure designed for information interchange is incompatible with standard being proposed. Final mention was made of Honeywell's positional letter not approving the Standard.

The chairman has requested that all participating organizations take a closer look as to the feasibility of standards in the area of more than seven track tape, such as a nine track tape and the associated widths possible for such tapes. This matter to be discussed more fully at the next meeting.

MEETING NOTES

Mr. R. E. Utman, BEMA Director of Standards, was introduced to the Joint Task Group on Magnetic Tape. Mr. Utman reviewed with the group the present and planned structure for the operation of Joint Working Groups. A review was made of the International structure and a report given on the status of proposed American Code for Information Interchange (ASCII). Mr. Utman's remarks are summarized below:

1. The plan presented at the International Meeting in Paris (October 1962) is being forwarded for a redefining of Joint Working Groups in the United States. Briefly, this means that administrative responsibilities will be assigned as follows: X3-Punched Cards, X4-Punched Tape, and X6 - Magnetic Tape.

CBI 67/1/11

2. Internationally, Punched Cards - TC97/SC4, Punched Tape - TC95/SC6, and Magnetic Tape - TC53/SC53D.

3. Scope of Joint Working Groups are to be reviewed and if necessary modified to include representation of code in media. Design of codes is not intended to be a part of the scope (X3.2 responsibility).

4. All Joint Working Groups must submit work programs and priority assignments so as to provide the Joint Steering Committee with necessary information for the preparation of a master schedule of work for all working groups.

5. The proposed ASCII is to be reconsidered by X3 as to what action must be taken in view of the [illegible] Standards Review Board action (ESRB). The question is one of holding back the ASCII code until it can be adapted to present media (paper tape, punched card, and magnetic tape) or overriding the ESRB action and submitting the ASCII for approval as a standard to the American Standards Association.

The Chairman stated the period for balloting and comments on Standard Proposal No. 790 (Standard Magnetic Tape) has been extended from 4 January 1963 to 4 February 1963. Discussion on status and comments was tabled until the next meeting. Brief mention was made of the Honeywell position letter. Briefly summarized this position was as follows:

> "Rejection of the proposed standard because of the inconsistency [illegible] the X3.2 proposed ASCII and the [illegible] that the Standard Magnetic Tape proposal [illegible] information interchange. The letter [illegible] that what is being proposed is [illegible] rather than a "Magnetic [illegible]"

Some of the group (Messrs. [illegible], [illegible], and [illegible]) agreed with [illegible] that a rewording of the SP790 was required to remove the implication that information interchange was possible [illegible] implementation of X3.2 ASCII [illegible] but that [illegible]

Mr. [illegible] groups his interpretation [illegible] label [illegible] of magnetic tape [illegible] on the order of nine tracks. [illegible] has been continually suggested to the group [illegible] with very little success. The chairman has requested that members of the group [illegible] this matter up with their company and then report at the next meeting the feelings toward a tape standard of 8 or 9 tracks plus the required width for such a tape whether 1/2 inch, 3/4 inch, or 1 inch. His concern is whether there would be future requirements and is such a tape feasible.

The tentative Physical Specification for Seven Track Standard Tape was then presented for review. It was pointed out by Mr. [illegible] that this was not intended to be a detail procurement type of specification. The members were asked to review this specification and if agreeable at the next meeting, it would then be released for comments and approval to the [illegible] membership list.

ATTENDANCE

R. L. Courtney	National Cash Register	Member
H. Hayman	NASA	Chairman
R. H. Lawler	Burroughs	Member
C. J. Lebel	Audio Devices	Member
J. L. Little	National Bureau of Standards	Observer
R. MacFadden	IBM	Member
R. M. Muise	Honeywell	Alternate/X3.2 Liaison Representative
R. E. Mullendorf	Bureau of Census	Observer
G. L. Murphy	Ampex	Member
R. E. Utman	BEMA	Observer

NEXT MEETING

The next scheduled meetings for [illegible] are as follows:

March 26, 1963	EIA Headquarters New York, New York
May 23, 1963	EIA Headquarters Detroit, Michigan

Richard M. Muise
X3.2 Liaison Representative

RMM/mg

MINUTES OF MEETING

OF JOINT TASK GROUP FOR INPUT/OUTPUT OF MAGNETIC TAPE

January 14, 1963

EIA Headquarters
New York, New York

MEMBERS PRESENT

Harry Hayman	NASA
John L. Little	National Bureau of Standards
Ralph E. Mullendore (observer)	Bureau of Census
R. H. Lawler	Burrough Corp.
R. E. Utman (observer)	BEMA
C. J. Lebal	Audio Devices, Inc.
Robert L. Courtney (alternate)	National Cash Register Co.
George L. Murphy	Ampex Corp.
Richard M. Muise (alternate)	Minneapolis-Honeywell

1. Meeting was called to order at 10:00 A.M.

2. Mr. Utman briefed the committee on the meeting of the steering committee. He further discussed the organization of the International Joint Working Groups, and a proposed reorganization of the Joint Working Groups in the United States.

3. Further discussion was held on the current activities and programs of this Joint Task Group for Input/Output on Magnetic Tape. The following is a tentative outline of these activities and intention.

   a. An electrical standard for magnetic tape (SP-790) has been submitted to E. I. A. membership as the initial step toward standardization. This is substantially the one-half inch, 7 track, 200 bits per inch format. It does not contain references or recommendations for a character set, but by its design, is limited to a six bit character set. It is the current 'de facto' standard.

   b. A Physical standard for magnetic tape material (7 track one-half inch) is ready for the first steps toward standardization.

   c. The committee will consider in the next meetings a further standard for eight or more track magnetic tape. Toward this end the committee members have been asked to determine the specifications their individual companies would desire in such a standard. This magnetic tape would be compatible with the ASCII character set.

(over)

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MINUTES OF MEETING

OF JOINT TASK GROUP FOR INPUT/OUTPUT OF MAGNETIC TAPE

January 14, 1963

EIA Headquarters
New York, New York

MEMBERS PRESENT

Harry Hayman	NASA
John L. Little	National Bureau of Standards
Ralph E. Mullendore (observer)	Bureau of Census
R. H. Lawler	Burrough Corp.
R. E. Utman (observer)	BEMA
C. J. Lebal	Audio Devices, Inc.
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   c. The committee will consider in the next meetings a further standard for eight or more track magnetic tape. Toward this end the committee members have been asked to determine the specifications their individual companies would desire in such a standard. This magnetic tape would be compatible with the ASCII character set.

4. The next meeting of the committee is scheduled for March 26, 1963 in New York City and following that, May 23, 1963 in Detroit.

Respectfully submitted,

Harry Hayman

Harry Hayman

Approved

1/23/63

10557:1a-1

January 16, 1963

X3.3 - X3.2 LIAISON REPORT NO. 8

Report of the 22nd meeting of ASA X3.3 Subcommittee on Data Transmission, held at BEMA Headquarters on January 16, 1963.

1. Task Group 1-Liaison: Expanded to three members -- Claussen, Crowley and Wheeler (Chairman of TR27.3) to conduct liaison with EIA, CCITT, X6 and IEC TC/53B.

2. Task Group 3-Data Transmission Formats: Title and following scope and program of work of reorganized Task Group approved:

   Scope: Development of standards of formating, for data transmission, of characters within a hierarchy of groupings (i.e., words, blocks, messages, etc.), including group error control; and the ordering (or sequencing) of bits within characters, including parity.

   Program of Work (Initial):

   a. A survey of present practices of order of bit transmission (sequence) for various codes in common use.

   b. Development of standards for bit sequencing of the proposed ASCII in the following:

      (a) Full 7-bit code transmission.

      (b) Above with parity.

      (c) Transmission bit sequence of related subsets of the proposed ASCII.

   c. Consideration of desirability of standards for bit sequencing of other codes, separated into the following categories:

      (a) Other binary based codes.

      (b) Fixed count codes.

      (c) Other codes.

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3. Task Group 4-End to End Control Characteristics: H. Guerber, RCA, Chairman, resigned; G. Willibald, General Electric, appointed chairman. Scope rewritten as follows:

> Define and specify functional control requirements and characteristics governing the operation of digital data generating and receiving systems interconnected by communication systems.

General program of work approved as follows:

a. Classification of techniques for system controls (including error control and synchronization).

b. Definition of functions of control signals for transmission between data-processing terminal equipments.

c. Specification of means for system control.

4. Task Group 5-Systems Performance: Proposed standard for the presentation of error statistics will be ready in two to four months.

5. Task Group 6-Digital Data Transmission Speeds: Title and following scope and program of work approved:

> Scope: Define and specify characteristics of digital data speeds at the interface between data-processing terminal equipment and data communication terminal equipment.

> Program of Work: Define and specify:

a. Signaling speed of reverse channel such as may be used for error control.

b. Signaling speeds for asynchronous transmission.

c. Signaling speeds for synchronous transmission within the voice band at greater than 3000 b.p.s.

d. Signaling speeds for use on communication channels of greater than voice band width.

e. Signaling speeds for parallel-by-bit and serial-by-character transmission.

f. Tolerances applicable to established standard speeds.

H. Crowley, Rome Air Development Center, was appointed acting chairman.

6. Joint X3.3 and TR27.3 Meetings: X3.3 reaffirmed their previous position, regarding joint meetings with TR27.3. The X3.3 Subcommittee, therefore, will continue to hold joint meetings with TR27.3 and will not form a joint committee with TR27.3.

Note: At the Joint Steering Committee Meeting of February, 1962, it was recommended that X3.3 and TR27.3 form a joint committee. The same Joint Steering Committee at their December meeting withdrew this recommendation, since X3.3 and TR27.3 were operating successfully as two separate committees meeting jointly.

X3.3 is also of the opinion that their ISO and IEC counterparts should also retain their separate identity, but meet jointly.

J. B. Booth
Liaison Representative X3.2-X3.3

JBB:am

DPSD:LLG:ef
21 January 1963

MEMORANDUM FOR THE CHAIRMAN ASA X3 COMMITTEE

Subj: X3.2 Subcommittee Status Report

Encl:
(1) Report of ASA X3.2 Subcommittee Activity and Projects
(2) ASA X3.2 Subcommittee Scope and Objectives
(3) ASA X3.2 Subcommittee List of Meetings
(4) ASA X3.2 Membership List

A report on the activities and work status of the American Standards Association X3.2 Subcommittee on Coded Character Sets and Data Formats is attached as enclosure (1); a statement of scope and objectives as enclosure (2); a list of 1962 meetings as enclosure (3); and a membership list as enclosure (4).

Summarizing briefly, during the past 15 months X3.2 has been engaged in the development of the proposed American Standard Code for Information Interchange (ASCII) in the preparation of documents related to this proposal, and in international activity leading to an ISO/TC97 draft proposal. In recent months, increasing attention has been devoted to the "unassigned" area of the proposal ASCII, to defining functional uses for the various control type codes, to the need for related subsets, and to the assistance of the media Joint Task Group in developing media standards proposals for implementation of the proposed ASCII in the principal input/output media.

Recently there has been a significant increase in requests to participate in X3.2 activity. This is attributed to increased awareness of, and interest in the standardization activity of X3.2 and the other ASA groups working on information processing systems standards.

The establishment of additional subdivisions of X3.2 to expedite the work program is under consideration.

/S/
L. L. GRIFFIN
Chairman X3.2

CBI 67/1/11

21 January 1963

Report of ASA X3.2 Subcommittee Activity and Projects

Subcommittee X3.2, for the past year, has been primarily engaged in advancing the proposed American Standard Code for Information Interchange (ASCII) through the ratification process on both a national and international basis.

When the structure of the proposed ASCII became reasonably firm within X3.2, two subcommittee members embarked upon an extended tour of European countries for the purpose of discussing code standardization with representatives of counterpart organizations in these countries. As a result of this spade work, a delegation from X3.2 attended an ECMA (European Computer Manufacturers Association) TC-1 (code standards) meeting in Rome, Italy in March 1962. This was followed by a meeting of ISO/TC97/Working Group B (Coded Character Sets and Data Formats) meeting on 2, 3, and 4 May 1962 in Paris, in which a delegation from X3.2 also participated.

Agreement was reached at the above WGB meeting to submit a code proposal to the participating nations at the working group level for their opinions for or against the proposal. Replies were to be returned by September 15, 1962. The 7-bit code favored by the majority of Working Group B members represented a relatively minor variation from that contained in the X3.2 documents (X3.2/1 through X3.2/3) of November 10, 1961. These documents had previously been forwarded by X3.2 to X3, and currently were in the process of review for ballot purposes within the X3 committee.

Following the Working Group B meeting, Subcommittee X3.2 on May 25, 1962 approved revised documents incorporating the 7-bit code set changes favored by Working Group B and recommended to X3 that:

a. The revised documents (X3.2/4 and X3.2/5) of May 25, 1962 superseded the earlier documents (X3.2/1 through X3.2/3).

b. That the ballot period be extended for proper consideration of the revised proposed ASCII.

c. The USA Support the code proposal favored by a majority at the May 1962 Working Group B meeting (proposal B of Working Group B Resolution 1 of 3 et 4 Mai, 1962).

Committee X3, as you know, accepted the revised documents and extended the ballot period. During this ballot period, X3.2 was engaged extensively in the preparation of replies to adverse position papers, in liaison activity with organizations and groups interested in the proposed ASCII and in preparation for the October 1962 ISO meetings in Paris.

Following approval of the proposed ASCII by X3 in September, and acceptance by ISO/TC97 of the Working Group B ISO draft proposal 6 and 7 BIT CHARACTER CODES FOR INFORMATION PROCESSING INTERCHANGE (ISO/TC 97/ GT B 30 F/E October 1962) X3.2 has turned its attention to:

a. Assignments for the "unassigned" area of the proposed ASCII.
b. Related subsets
c. Definition and function of control-type characters.
d. Advancing media standards proposals.

A Task Group (X3.2.4) was formed in September 1962 whose purpose is to study and make recommendations regarding the assignment of characters in the UNASSIGNED area of the proposed ASCII. The present consensus of this Group is that this area should be "Unassigned for graphics only;" in other words, not for control-type characters. They also feel that this area should be left open for "industry choice" assignment. I believe this should be treated as a tentative position since only one meeting of the X3.2.4 Task Group has been held.

The establishment of additional task groups is under consideration in order to obtain more discussion time on each of the above subjects and to advance them more rapidly to the recommendation stage.

A significant number of new member applications have been received recently and inquiries indicate more will be received. This is interpeted as relecting an increased awareness of the significance of the standards work underway in X3 and its subsidiary organizations.

21 January 1963

ASA X3.2 SUBCOMMITTEE SCOPE AND OBJECTIVES

SCOPE:

Recommendation to the X3 Sectional Committee of Standards for coded character sets and recording formats for the interchange of information between data processing systems and between systems and associated equipment. Such recommended standards are to include:

1. The machine sensible coded character set.

2. Such standard formats and format indicators as are required to define data fields, data records, program instructions and the like.

OBJECTIVES:

To develop a standard coded character set for the interchange of information among information processing systems, communication systems and associated equipment, to identify such logically related subsets as may be found necessary for general information interchange; and to define the logical format or formats required to accomplish such interchange including the physical interchange of the principal record media and to provide such definitions of the purpose and function of control characters as necessary to facilitate the interchange of information.

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21 January 1963

ASA X3.2 SUBCOMMITTEE LIST OF MEETINGS

1962

Date	Location
January 31 - February 2, 1962	Saga Motel, Pasadena, California
February 26 and 27, 1962	BEMA, New York City
March 29 and 30, 1962	AT&T Co., New York City
April 11 - 13, 1962	Sherman Hotel, Chicago, Ill.
May 23 - 25, 1962	Statler Hotel, Washington, D.C.
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July 25 - 27, 1962	Cockatoo Hotel, Hawthorne, Calif.
August 22 and 23, 1962	BEMA, New York City
September 11 and 12, 1962	BEMA, New York City
October 31 - Nov. 1 & 2, 1962	ASA & BEMA, New York City
December 5 - 7, 1962	Marriott Motor Hotel, Phil. Pa.

1963

X3.2 has not scheduled beyond the first meeting in 1963, which is to be held January 22-23 at BEMA Headquarters in New York City.

ENCL (3)

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DEPARTMENT OF THE NAVY
NAVY MANAGEMENT OFFICE
WASHINGTON 25, D. C.

DPSD:LLG:ef
21 January 1963

MEMORANDUM FOR THE CHAIRMAN ASA X3 COMMITTEE

Subj: X3.2 Subcommittee Status Report

Encl: (1) Report of ASA X3.2 Subcommittee Activity and Projects
(2) ASA X3.2 Subcommittee Scope and Objectives
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Recently there has been a significant increase in requests to participate in X3.2 activity. This is attributed to increased awareness of, and interest in the standardization activity of X3.2 and the other ASA groups working on information processing systems standards.

The establishment of additional subdivisions of X3.2 to expedite the work program is under consideration.

L. L. Griffin
L. L. GRIFFIN
Chairman X3.2

NM #14
310/4

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21 January 1963

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1963

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ENCL (3)

A PROPOSED DISCIPLINE FOR THE USE OF "ESCAPE"

D.A. Kerr
American Telephone and Telegraph Co.
New York, New York

Jan. 22, 1963

Introduction

The proposed American Standard Code for Information Interchange includes a character designated "escape". This character is intended to modify succeeding characters so as to permit the representation of characters not within the A.S.C.I.I. proper. The exact application and method of use of "escape" has not yet been determined.

This paper offers some thoughts on how "escape" may be defined and applied, and treats the effects of such a use on the coexistence of data processing and data communication systems. An implementation planned for use in the Bell System is described.

Application

It has been observed that "escape" could be used to permit the representation of either controls or graphics lying beyond the basic A.S.C.I.I. set. It is realized that the yet undefined characters "Shift Out" and "Shift In" are related to the use of "escape". Some presumptions will be made regarding the division of functions between "shift" and "escape" operations.

Much discussion has been conducted regarding the difference between "extended" and "temporary" modification of the interpretation of characters by an "escape" or "shift" character. It seems as though there may often be need for entry into an alternative set of graphics for an extended period. Operation in a foreign alphabet or a set of scientific symbols are examples. On the other hand, control symbols are not generally used in "strings". Hence, it seems unlikely that standard means should be provided in general information interchange to enter a set of special controls for an extended period. In fact, the ability to so enter a state of special interpretation of characters as representing "extraordinary" controls is somewhat dangerous. Failure to respond to the "return to normal" indication may cause extremely unfortunate effects as succeeding characters are incorrectly interpreted.

Thus, it is suggested that the "Shift Out" and "Shift In" characters be used to enter and return from one or more special sets for the purpose of representing graphics. Conversely, "escape" should be used for the representation of single extraordinary controls.

At this time it does not appear either desirable nor necessary to make standard assignments of such extraordinary controls; rather, the escape concept should be entirely available to the designers of specific systems. Naturally, standards will arise within specific communications or processing system management organizations.

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It should be recognized that, although "escape" would cause only a temporary modification of character interpretation, a control so represented may have extended effect upon the system. Such controls even exist in the basic A.S.C.I.I. as, for example, a device control assigned to represent "reperforator on", a condition existing until cancelled.

Data Communications

Two major fields of use are generally described for the proposed A.S.C.I.I., data processing systems and data communications systems. A virtue of broad acceptance of the proposed A.S.C.I.I. is that it potentially permits any data processing system to utilize a wide variety of data communications systems for the transmission of its information. Such data communications systems in general consist of terminal apparatus connected by transmission facilities and, in many cases, switching equipment. The terminal apparatus may be teletypewriter equipment, magnetic tape drives for communications, real-time communications units, or similar gear.

Often such terminal apparatus must make use of the "escape" concept to create a sufficient number of controls. The specific planning of such controls forms a part of the design of compatible terminal systems.

Similarly, the data processing equipment, which forms the source and destination of the data "text", may often need to utilize the "escape" philosophy to create additional controls for program selection or similar functions. Processing units intended to intercommunicate are designed for compatible assignment of such controls.

If the data communications system engineers and their data processing counterparts are each to have fullest flexibility in the design of their systems, and yet have the ability to expect general interoperation of their respective systems, means must be found to prevent accidental interference between systems due to the use of "escape"-created extraordinary controls.

Such interference between controls in the basic proposed A.S.C.I.I. set has been avoided by providing discrete assignment for codes used primarily for terminal control and those (such as the Information Separators) used primarily in the data message proper. (It should be recognized that, of course, a communications terminal used as an I/O device may utilize "processor" controls, and that a processor may use "terminal" controls when controlling a communications terminal or controlling a "terminal" function of another processor).

Thus, one way to avoid interference between extraordinary controls would be to have two escapes, one "processor" oriented and one "terminal" oriented.

(In addition, a communications system may include within it a transmission link including autonomous error control or similar functions which uses the "Data Link Escape" to provide the controls needed for such operation. This is in addition to the two "escapes" proposed above).

The use of such a second "escape" appears to be a necessity in the design of new Bell System data communications services. Accordingly, we have tentatively planned to implement the character "1111101", which lies above escape in the 8th stick and is currently unassigned. We have chosen the name "alternate mode" to designate this "terminal escape".

Discipline of Use

The following may be taken as applicable to either "escape" if two are to be used.

In accordance with the recommendations described under Application, it is felt that the modification of character interpretation caused by "escape" should not last for an indefinite period. A possibility is to have "escape" affect only the next character. A more flexible arrangement will be proposed later.

In any case, some simple means must be defined to permit determination of the end of an "escape" sequence if an intermediate code-sensitive device is to not respond "normally" to characters within such a sequence. A communications terminal, for example, may be arranged to ignore all characters after "escape" until something has happened, if the something is defined.

Admittedly, the "control" created by an escape sequence may itself effect a more permanent departure from standard operation, but such a possibility cannot be readily covered by a Standard.

A processor which uses an escape-created control to effect an extended entry into a state of extraordinary character interpretation must expect a generalized communications system to continue normal character interpretation.

If a specific system has the ability to leave a character-organized universe for binary stream operation, for example, an extraordinary control may initiate this departure, with return to normal to be achieved by some method not yet determined. Such operation, however, cannot necessarily be admitted by communications systems at large without specific preparation.

It is proposed that the definition of the "end" of an escape sequence (the above mentioned "something") be eventually included in the A.S.C.I.I. to facilitate the use of "escape" in general information interchange.

One method of providing a flexible, "open-ended" discipline of "escape" use is that of "Intermediate and Final Characters". The characters of the proposed A.S.C.I.I. would be divided into two groups, Intermediate and Final. Any Final character is by definition the last character of an escape sequence in which it appears. An extraordinary control may be represented by "escape" followed by any number of Intermediate characters (none if desired) and a Final character. This allows the creation of as many different "one-character" escape sequences as there are Final characters, and an unlimited number of multi-character escape sequences.

Yet, if the two groups are simply defined, any intermediate device can easily ignore the characters in the sequence if they do not form a specific extraordinary control meaningful to it. The Final character is recognized and returns the system to normal character interpretation.

A number of practical considerations lead to the selection of an Intermediate/Final grouping pattern. Since many extraordinary controls may have to be created at the man-machine interface(i.e., a keyboard for example), it is desirable to have the ability to create a large number of such controls through the use of easily handled characters. The "nicest" characters for this purpose are the letters and numbers, followed by "common" punctuation. For ease in administration, it seems desirable to have letters in one group (I or F) and numbers in the other. If letters are made Finals, a larger number of one character plus two character sequences obtain, and 2600 three character sequences are still available even if only letters and numbers are used.

We will assume for simplicity that both I and F groups contain half of the proposed A.S.C.I.I. set each. It seems difficult to establish the advantage of any other partition scheme. There are, however, a number of ways in which the set may be bisected leaving letters in one half and numbers in another. The one recommended is to place all characters having B6=0 in the Final half. This provides a number of practical advantages:

It is desirable to assure as far as possible that a device does not "get stuck" in an escape sequence due to the accidental loss or mutilation of its Final character. If text is being sent, the extraordinary interpretation will end with any letter (a terminal character). If tabular numeric data is being sent, however, this will not occur. However, carriage return and line feed (as well as other format effectors) are, in the proposed partition, Final, and hence will promote return from such a "stuck" condition. Since EOT and EOM are in the same category, restoral of the system to normal should a message end in the middle of an apparent escape sequence.

On the other hand, "escape" is an Intermediate character; hence, accidental or intentional transmission of more than one "escape does not cause the sequence to end. Thus, there is no possibility of an ambiguous condition arising from such a multiple "escape" transmission.

The character "Delete" is also an Intermediate; hence an error deletion in the midst of an escape sequence would not prematurely return a communications system to "normal" character interpretation.

It is quite possible that different disciplines may be chosen for the two "escapes". However, there are appreciable advantages in implementation if the two escapes are used in the same fashion. A teletypewriter, for example can suppress all normal character responses after either type of escape until a final character has passed through the system. A machine so equipped would be able to handle "transparently" any message containing either "processor" or "communications" extraordinary controls.

In any case, both "escapes" must be subject to simple definitions. For example, it may turn out that the "communications terminal" escape would use the I/F concept (a highly attractive notion), while the "processor" escape would use the "single character after escape" method. Such an arrangement could be readily accommodated, where required, in teletypewriters.

DKerr

D.A. Kerr

American Telephone & Telegraph Co.
New York, New York

X3.2 Subcommittee
Task Group on "Escape"

Report Number Two of Committee
on Related Subsets

Meeting Time and Place

Morning of January 23, 1963

BEMA Headquarters, NYC

Members Present

John B. Booth	Teletype
Harry Layton	Monroe - Chairman
George Misthos	Kleinschmidt
George Shimabukuro	Burroughs

General -

Discussion centered on three topics: (1) Can subsets of the proposed ASCII be called standards? (2) Investigation of the need for a six-bit subset for information interchange; and, (3) investigation of four-bit subset requirements.

Legality of Subsets Being Called "Standards"

Some time was spent considering the possible status of subsets of the proposed ASCII which might be submitted as standards. It was questioned if ASA would allow these subsets to be called standards. It was recognized that a definition of the legality of establishing subsets of the proposed ASCII as standards is required and will be further pursued.

Investigation of Six-Bit Subset Requirements

An investigation of possible requirements for a six-bit subset of the proposed ASCII was undertaken. An initial conclusion reached was that there is no apparent need for establishing a defined six-bit subset. Some of the assumptions which led to the above

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conclusions are:

1. In the long run, no real savings can be seen for interchanging information in a six-bit set since media will be designed to accompany a seven-bit set or more.
2. The six-bit code used in the central processor will probably be set by the individual manufacturer.

Four-Bit Subset

An investigation of the need for a four-bit subset of the proposed ASCII was begun. Preliminary analysis indicates that there might be a need for establishing a four-bit subset (or subsets) for applications where economics can be realized by using only a four-bit set.

Harry Layton

Harry Layton
Chairman

January 29, 1963

To: X3.2 Subcommittee
From: X3.2 Ad Hoc Group on "Escape"
Subject: Preliminary Proposal on Use of Escape

The X3.2 Ad Hoc Group on "Escape" met during the January 23, 1963 X3.2 meeting. The material covered in the attached paper by D. A. Kerr of A.T.& T. was discussed. This paper offers certain concepts regarding the use of "Excape", and indicates A.T.& T.'s tentative desires in this field.

It was recognized by the group that the following subjects are tightly interrelated:

Escape
Shift Out-Shift In
Binary stream and encryted operation
Collapse of the 7-bit set for representation in
    6-bit processors
Interoperation of data communication and data
    processing systems

Little progress can be made in any one such area (such as Escape) while the other areas are as fluid as they currently are. An iterative solution was proposed: that is, plausible constraints were chosen on certain of the areas and consistent proposals then contrived for the other areas. The set of "preliminary recommendations" thus obtained form a mutually consistent structure which can serve as a starting point in the search for an optimum structure.

The Ad Hoc Group on Escape in no way suggests that the following "preliminary recommendations" are optimum, but merely that they form a compatible structure of admissible solutions to serve as such a "starting point".

PRELIMINARY RECOMMENDATIONS

1. Shift-Out and Shift-In modify, on a "locking"basis, the graphic subset of the proposed ASCII.

2. Escape be used as a prefix to the group representation of individual controls not found within the basic pASCII set.

   Such controls are to be of the textual, or processor-oriented type.

3. A "communicator's escape" be assigned for use as a prefix to the group representation of individual controls not found within the basic pASCII set.

   Such controls are to be of the communications terminal type.

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The character lying below ACK in the 8th stick, non-unassigned, be used for this purpose.

4. An "Intermediate/Final" discipline of Escape, as described in the attachment, be used for the "communicator's escape", and be considered for the processor's escape.

5. An "extraordinary "control (i.e., one created by escape means) may be used to place a communications system in a code (and character) insensitive state for binary stream operation. At this time, it appears that the discipline of return from this state must be chosen based upon the specific system used and the nature of the data to be transmitted.

The Ad Hoc Group on Escape will welcome comments on this set of "preliminary recommendations". Of special interest will be comments relating the proposed structure to specific needs for various types of operation.

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DAK:vm
Attachment